CLAIMS

What is claimed is at least the following:

1. A data communication system, comprising:

a number of nodes interconnected in a network, the nodes including a source node, a destination node, and at least one intermediate node;

source logic in the source node to identify a data route from the source node to the destination node through the at least one intermediate node, the data route being specified by a sequence of at least one destination port value and a current hop count that are attached to a data packet to be transmitted from the source node to the destination node;

routing logic in the at least one intermediate node to route the data packet along the data route; and

destination logic in the destination node to detect a final destination of the data packet.

2. The system of claim 1, further comprising:

return routing logic in the at least one intermediate node to record at least one source port value of the at least one intermediate node in the data packet; and

wherein a total hops value is attached to the data packet.

3. The system of claim 1, further comprising a routing table located in the source node, the routing table containing at least one data route from the source node ~~to the destination node~~.

4. The system of claim 1, wherein the routing logic further comprises logic to decrement the current hop count.

5. The system of claim 2, wherein the return routing logic further comprises logic to replace the at least one destination port value in the data packet with the source port value of the at least one intermediate node.

6. A data communication system, comprising:

a number of nodes interconnected in a network, the nodes including a source node, a destination node, and at least one intermediate node;

path identification means in the source node for identifying a data route from the source node to the destination node through the at least one intermediate node, the data route being specified by a sequence of at least one destination port value and a current hop count that are attached to a data packet to be transmitted from the source node to the destination node;

routing means in the at least one intermediate node for routing the data packet along the data route; and

destination means in the destination node for detecting an arrival of the data packet at the destination node.

7. The system of claim 6, further comprising:

return routing means in the at least one intermediate node for recording at least one source port value of the at least one intermediate node in the data packet; and

wherein a total hops value is attached to the data packet.

8. The system of claim 6, further comprising a routing table located in the source node, the routing table containing at least one data route from the source node to the destination node.

9. The system of claim 6, wherein the routing means further comprises means for decrementing the current hop count.

10. The system of claim 7, wherein the return routing means further comprises means for replacing the at least one destination port value in the data packet with the source port value of the at least one intermediate node.

11. A method for data communications, comprising the steps of:

generating a data packet to transmit from a source node to a destination node through at least one intermediate node in a network;

identifying a data route from the source node to the destination node through the at least one intermediate node, the data route being specified by a sequence of at least one destination port value and a current hop count that are attached to the data packet to be transmitted from the source node to the destination node;

routing the data packet along the data route in the at least one intermediate node; and

detecting an arrival of the data packet in the destination node.

12. The method of claim 11, further comprising the steps of:

attaching a total hops value to the data packet; and

recording at least one source port value of the at least one intermediate node in the data packet in the at least one intermediate node.

13. The method of claim 11, wherein the step of identifying a data route from the source node to the destination node through the at least one intermediate node further comprises the step of examining a routing table located in the source node, the routing table containing at least one data route from the source node to the destination node.

14. The method of claim 11, wherein the step of routing the data packet along the data route in the at least one intermediate node further comprises the step of decrementing the current hop count.

15. The method of claim 12, wherein the step of recording at least one source port value of the at least one intermediate node in the data packet in the at least one intermediate node further comprises the step of replacing the at least one destination port value in the data packet with the at least one source port value of the ~~at least one intermediate node.~~